

AN INNOVATIVE APPROACH TO POLLUTION PREVENTION FOR U.S. ARMY RESERVE FACILITIES

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Abstract

The U.S. Army Reserve 90th Regional Support Command (RSC) has recently developed a Pollution Prevention (P²) Program specific to the needs of the Army Reserve. The 90th RSC consists of 122 active facilities located over a five-state region: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. For this project, the greatest concern in developing a comprehensive P² Program is the large geographic area and logistical issues present in the 90th RSC's five state area of responsibility. Consideration for federal and state waste management and transportation regulations, the number of facilities, and development of initiatives that are consistent with achievement of Army Reserve P² goals, are the overall prominent factors which influenced development of this program and its associated documents. This P² Program identifies the process for establishing the individual facilities current operational conditions for use in the generation of a command baseline against which future P² efforts can be measured. The selection process includes detailed technical and economic feasibility analyses performed to assist the command in determining which options provide the best return on investment and ease of implementation. As P² plan development was formulated to take into account the number of facilities and their locations, one innovative P² project, a mobile recycling unit for reconditioning used vehicle fluids, has been presented to the 90th RSC. This approach would enable all facilities to have access to these recycling units without the cost of purchasing separate units for each facility.

Introduction

As with most Department of Defense (DoD) facilities, the Army Reserve has begun integrating pollution prevention (P²) as part of its everyday activities. The 90th RSC is one of twelve RSCs in the United States and is comprised of 122 active facilities in five adjoining states, location of these facilities is shown in Figure 1. Because of the number and distance between facilities, developing a cohesive P² plan and program such that all facilities can participate posed certain challenges.

The current initiative on pollution prevention is to meet state and national pollution prevention policy goals, reduce long-term liabilities of waste disposal, save money by reducing waste treatment and disposal costs, and protect public health and the environment. Pollution prevention is a cost-effective means of meeting environmental objectives in an era when U.S. Army facilities are simultaneously subjected to stricter standards for pollution control, public criticism of their environmental records, and declining budgets.

In an effort to accomplish the P² goals established by the U.S. Army, Army Reserve, DoD, and Executive Order 12856, the 90th RSC initiated an effort to establish P² baselines, identify and evaluate P² options, and develop projects that would be feasible for implementation as part of a comprehensive P² program. The following provides a discussion of these efforts and the approach to implementation across the 90th RSC.

P² Baseline

In order to develop the P² baseline, data was collected from each of the 90th RSC facilities to determine the annual material usage and waste disposal practices. A questionnaire was developed to enable standardization of information collected which included:

- Units located at each facility
- Operations at facility
- Materials usage
- Environmental Compliance reporting (EPCRA Section 313, biennial RCRA Hazardous Waste Report, air permits, etc.)
- Ozone Depleting Chemical (ODC) surveys
- Waste generation (motor oil, wastewater, municipal solid waste, etc.)
- Recycling programs

Site visits and telephone interviews were conducted to collect the above information using the questionnaire as a guideline. Once all of the data was collected from each of the facilities, the P² baseline was developed. The wastes being generated by each Army Reserve facility were divided into waste/usage categories such as ODC, Emergency Planning and Community Right-To-Know Act (EPCRA) Chemicals, Resource Conservation and Recovery Act (RCRA) Hazardous Wastes, and solid and other nonhazardous wastes. Selection of these categories was based on Army, Army Reserve, and DoD P² goals. The established baseline is used as a benchmark to measure all future P² progress.

Pollution Prevention Opportunity Assessments

Ten waste streams were selected for development of P² options based on the overall types and quantities of waste generated by the 90th RSC, those selected were as follows:

- Used oil
- Oil and fuel filters
- Parts washer solvent
- Antifreeze recycling
- Hydraulic oil and transmission fluid
- Brake fluid
- Contaminated fuel
- Municipal solid waste
- Washrack wastewater
- Ozone Depleting Chemicals.

Technical and economic evaluations were performed on options considered for reduction or elimination of the ten specified waste streams. In developing P² options, the location, number of facilities, maintenance unit reporting hierarchy and waste generation quantities was considered in order to meet the specific needs of the 90th RSC. Many of the facilities provide limited operator-level vehicle maintenance, therefore it was realized that purchase of waste or used material processing equipment at each of the 122 facilities would not be cost effective in many instances due to the minimal quantities generated.

Those P² options that were determined not to be feasible were immediately eliminated from consideration. P² options that had some merit were further evaluated to determine which P² options would be both cost effective and provide the greatest waste reduction. Evaluation of the P² options was performed using an unbiased ranking system with the following criteria:

- Preferred option hierarchy (management practices, equipment replacement, etc.)
- Worker safety
- Feasibility for implementation
- Cost
- Waste reduction.

Points were assigned (maximum of 10 for best option) to each of the criteria and tallied to determine the P² option with the best potential for implementation for each P² opportunity.

Pollution Prevention Projects

Per each waste stream, the option that rated the highest score through the ranking criteria was reclassified as a P² project deemed viable for implementation. Project development involved examining whether or not the project would enable the 90th RSC to meet its P² goals, applicable regulations, overall project cost and payback, and the barriers that may be encountered if the project were implemented. For each project, an implementation plan was developed to outline the steps needed to execute the project. The projects developed include:

- Solvent replacement for parts washers
- Mobile transmission fluid, hydraulic oil, brake fluid, and antifreeze recycling unit
- Management practices for contaminated fuel reduction
- Municipal solid waste recycling
- Management practices for wash rack wastewater reduction
- Used oil recycling
- Oil filter crushing and recycling
- Ozone depleting chemical phase out.

The mobile recycling unit proposed for reconditioning of used ethylene glycol antifreeze, 10W hydraulic oil, and possibly silicone-based brake fluid and automatic transmission fluid, is one project where the number and location of 90th RSC facilities was especially considered.

municipal solid waste P² assessment, 65 percent of centers and facilities throughout the 90th RSC are participating in local government sponsored recycling programs.

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